DECAM Procedure for Receipt of CCD Sensors from LBNL

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26 Jan 2006

INTRODUCTION

CCDs delivered from LBNL may be shipped in Gelpaks or on blue wafer dicing tape. Parts shipped on tape should be removed from their disks and stored in labeled Gelpaks. All sensors must also be visually inspected for defects.

ESD WARNING

CCDs are much more sensitive to ESD damage than strip detectors. The following shall be used whenever handling a CCD:

- ESD-safe lab coat (blue with black threads, not a tyvek coat)
- A properly grounded wrist strap
- Nitrile gloves (not latex)
- Facemask
- Air ionizer

If anything unusual occurs during handling or bonding, such as forgetting to wear a wrist strap, this information should be reported on the sensor handling log.

PROCEDURE PART 1 – REMOVAL OF SENSORS FROM WAFER TAPE

This task is to be performed in the DES work area in the Lab A Class 1000 cleanroom.

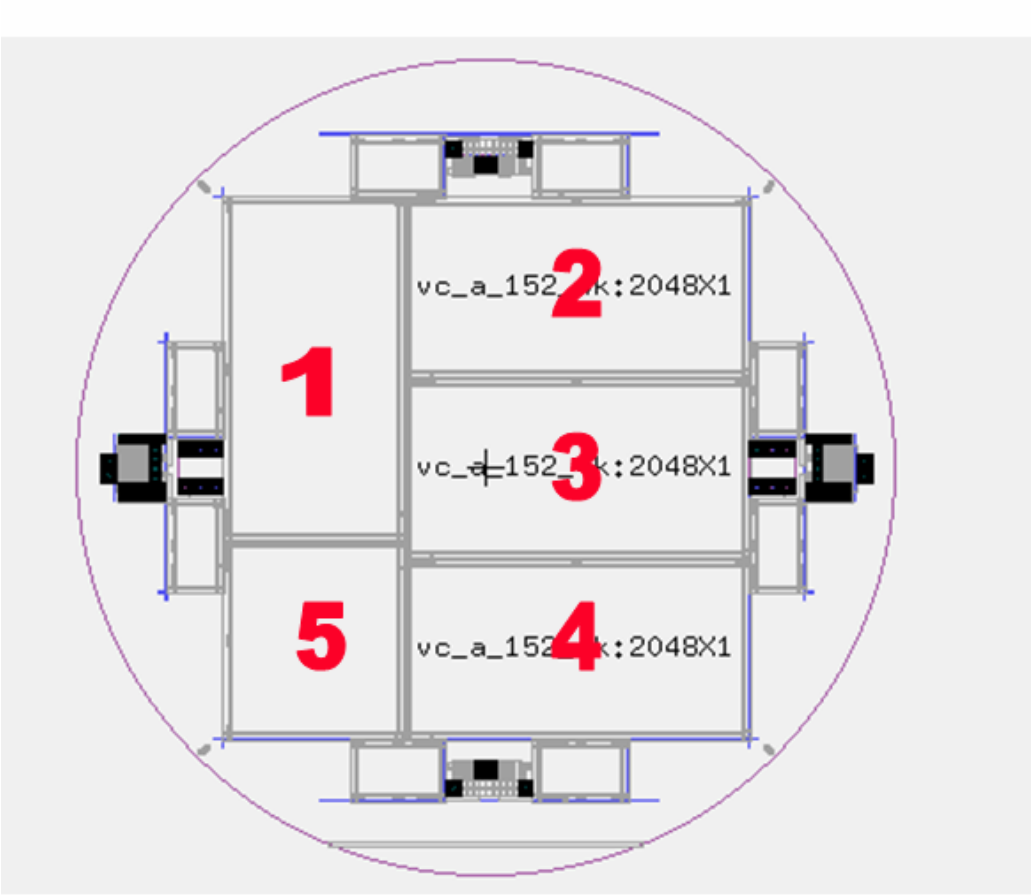
Equipment needed:

- ESD gear
- Wafer tape vacuum jigs (2x4, 2x2, and 1x0.5 (not yet made))
- Gelpak cases with labels for recording ID numbers

For each wafer:

1. Prepare Gelpak boxes for the sensors. The sensor ID number has three parts, which are based on the batch number, wafer number, and sensors position on the wafer. The batch and wafer numbers should be provided. The sensor location numbers in the wafer are shown below. However, the sensors may not be oriented on the dicing tape in this orientation. The 2kx2k sensor number is obvious, but the 2kx4k numbers should not be assumed. This portion of the ID number (-1 through -4) should be left blank until it is verified by visual

examination of the number printed in one corner of these sensors during visual scanning.



Labels on each Gelpak shall indicate the ID numbers of the CCDs it contains. If more than 1 CCD is stored in a single Gelpak, the position of each sensor relative to the clipped case corner must be indicated.

2. Select the appropriate vacuum block size for the particular sensor. Inspect top surface for cleanliness and clean as necessary.
3. Apply vacuum to the vacuum block.
4. Hold the wafer support ring with the sensors on the bottom side of the tape. Center the CCD of interest over the vacuum block and slowly lower the wafer until the sensor is held in place by the block.
5. Using a sharp blade, carefully cut through the dicing tape along the perimeter of the vacuum block.
6. Safely store the sensors remaining on the wafer ring.
7. Starting at one corner, slowly pull the dicing tape backwards (not up!) until the CCD is fully uncovered. The CCD should remain in place on the block due to the force applied by the vacuum. Note any irregularities in the surface on the CCD handling log.

8. Pick up the vacuum block and place the exposed CCD surface (the back side) on the film in its position in the Gelpak case. The Gelpak case should not have vacuum applied.
9. Turn off vacuum from the vacuum block and carefully remove it from the CCD.
10. Close the Gelpak case and store it in the drybox.

Empty wafer tape rings and shipping containers should be returned to LBNL to the following address using the 40-40.38.20.02 task code:

Steve Holland
Lawrence Berkeley National Laboratory
1 Cyclotron Rd.
M.S. 50B-6208B
Berkeley, CA 94720
Phone: 510-486-5069

PROCEDURE PART 2 – VISUAL INSPECTION OF SENSORS

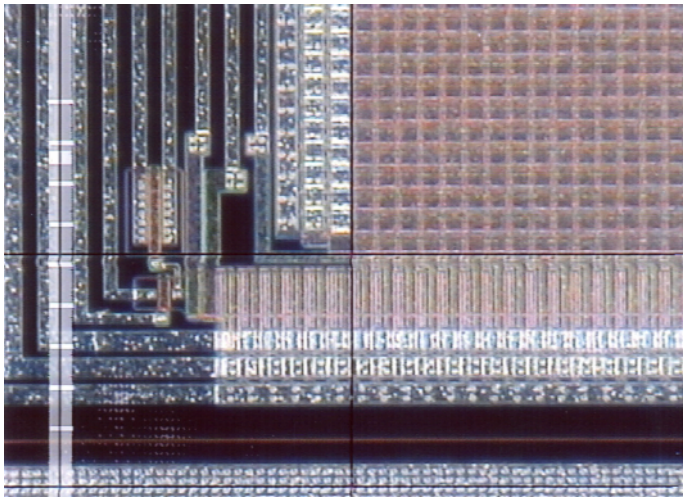
This task is to be performed in the Lab A Class 1000 cleanroom using the OMIS CMM in the corner next to the HVAC air return.

Equipment needed:

- ESD gear
- Local air ionizer

For each sensor:

1. Place the Gelpak case on the OMIS table with the long sets of bondpads towards the front of the machine.
2. Adjust the table angular alignment until the CCD is lined up with the XY axis of the table.
3. Move the crosshairs to the lower left active corner (position indicated in the photo below) and set the XY origin on the OMIS readout software.

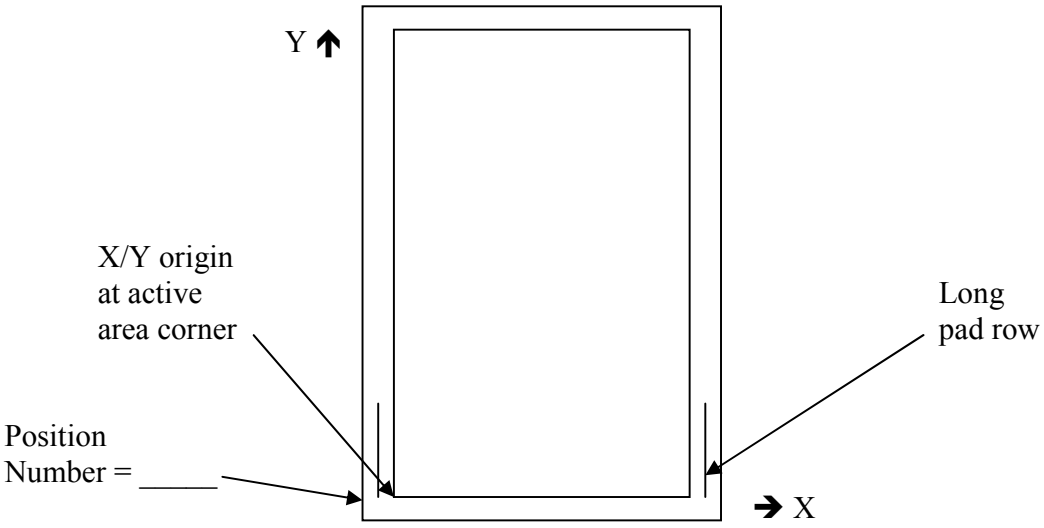
i. 

4. For 2kx4k sensors, the ID number is printed in aluminum in the extreme lower left corner of the silicon. Record this number on the inspection sheet and update the Gelpak label accordingly.
5. Scan the entire pixel surface of the CCD to look for irregularities in the sensor. Look for obvious flaws or contamination and record the XY location and a basic description of any such features observed.

CCD Front Surface Visual Survey:

ID # = _____

Inspection initial & date: _____



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Add additional comments if necessary.